

## **Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): An integrated circuit, comprising:

- a number of pads;
- a constant current source to provide a current;
- a thermal diode that receives said current, said thermal diode being coupled between first and second ones of said pads; and
- an analog to digital converter to i) receive a forward bias voltage of the thermal diode, and ii) output a digital representation of the forward bias voltage;

wherein a third one of said pads is provided to receive a reference current, said third pad being coupled to an input of said constant current source, said reference current thereby serving to control the constant current source.

Claim 2 (original): The integrated circuit of claim 1, further comprising logic to receive the digital representation of the forward bias voltage and calculate a temperature of the integrated circuit.

Claim 3 (original): The integrated circuit of claim 2, wherein said logic comprises a temperature look-up table.

Claim 4 (original): The integrated circuit of claim 1, further comprising a register to store the digital representation of the forward bias voltage, said register being readable during normal operation of the integrated circuit.

Claims 5 and 6 (cancelled)

Claim 7 (currently amended): An integrated circuit, comprising:

- a constant current source to provide first and second currents of different magnitudes;

first and second thermal diodes that respectively receive said first and second currents;

a comparator to receive forward bias voltages of each of the thermal diodes, to compare the forward bias voltages, and to output a voltage difference indicative of a temperature of the integrated circuit; and

a pad to receive a reference current, said pad being coupled to an input of said constant current source, said reference current thereby serving to control the constant current source.

Claim 8 (original): The integrated circuit of claim 7, wherein the thermal diodes are positioned adjacent one another.

Claim 9 (original): The integrated circuit of claim 7, wherein the first and second currents have a known relationship.

Claim 10 (original): The integrated circuit of claim 7, wherein the second current is an integer multiple of the first current.

Claim 11 (original): The integrated circuit of claim 7, wherein the comparator is a differential amplifier.

Claim 12 (original): The integrated circuit of claim 11, further comprising an analog to digital converter to i) receive the voltage difference output by the differential amplifier, and ii) output a digital representation of the voltage difference.

Claim 13 (original): The integrated circuit of claim 12, further comprising logic to receive the digital representation of the voltage difference and calculate a temperature of the integrated circuit.

Claim 14 (original): The integrated circuit of claim 7, further comprising an analog to digital converter to i) receive the voltage difference output by the comparator, and ii) output a digital representation of the voltage difference.

Claim 15 (original): The integrated circuit of claim 14, further comprising logic to receive the digital representation of the voltage difference and calculate a temperature of the integrated circuit.

Claim 16 (original): The integrated circuit of claim 15, wherein said logic is configured in accordance with a known relationship between the first and second currents.

Claim 17 (original): The integrated circuit of claim 15, wherein said logic comprises a temperature look-up table.

Claim 18 (original): The integrated circuit of claim 15, further comprising one or more analog to digital converters to i) respectively receive said first and second currents, and ii) output digital representations of said first and second currents to said logic.

Claim 19 (original): The integrated circuit of claim 14, further comprising a register to store the digital representation of the voltage difference, said register being readable during normal operation of the integrated circuit.

Claim 20 (cancelled)